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## REMARKS

Claims 112-118, 120, 123, 124, 127, 131-134, 137-139, 141-145, 147-153, 157-158, 161, 165-168, 171-173, 175-178, 180-190, 192, 196, 197, 200, 204-207, 210-212, 214-217, and 219-224 are pending. Claims 1 – 111, 119, 121, 122, 125, 126, 128-130, 135, 140, 146, 154-160, 162-164, 169, 170, 174, 179, 191, 193-195, 198, 199, 201-203, 208, 209, 213, and 218 have been cancelled. Claims 149 have been amended. New claims 225 and 226 have been added. No new matter has been added. In particular, support for the amendment to claim 149, and new claims 225 and 226 can be found at paragraphs [0212] – [0213] and [0238] – [0239] of the specification.

Applicants reserve the right to pursue the claims as originally filed in one or more continuing applications.

### Claim Rejections 35 § USC 101

The Examiner has rejected claims 149-153, 157, 158, 161, 165-168, 171-173, 176-178, 180 and 181 under 35 USC § 101 as being, allegedly, directed to non-statutory subject matter. Applicants disagree with the Examiner's assertion.

The Examiner argues that "the claims encompass a written computer listing that does not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer's program functionality to be realized." (Office Action, p.4). The Examiner argues further that the claims "further encompass embodiments wherein the electronic and magnetic media encompass signal and carrier wave embodiments wherein the electronic and magnetic media encompass signal carrier wave embodiments that are also not statutory subject matter." (Office Action, p.4).

In the interest of expediting prosecution, and in no way acquiescing to the validity of the Examiner's rejection, Applicants have amended the claims to be more clearly define what is being claimed.

Accordingly, Applicants believe that the rejection has been rendered moot.

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**Claim Rejections 35 USC § 103(a)**

The Examiner has rejected claims 112-117, 123, 124, 127, 131-134, 137-139, 141, 143-145, 147-148, and 221-224 under 35 U.S.C. §103(a) as being unpatentable over Petricoin (The Lancet, 359:572 – 577 (February 16, 2002)) in view of Golub, Science, 286:531-537 ("Golub" herein).

The Examiner has also rejected claims 112-118, 120, 123, 124, 127, 131-134, 137-139, 141-145, 147-153, 157, 158, 161, 165-168, 171-173, 175-178, 180-190, 192, 196, 197, 200, 204, 205, 210-212, 214-217 and 219-224 under 35 U.S.C. §103(a) as being unpatentable over Petricoin in view of Golub, as applied to claims 112-117, 123, 124, 127, 131-134, 137-139, 141, 143-145, 147-148, and 221-224, above, and further in view of Barnhill, U.S. Patent No. 6,789,069 (the '069 reference herein).

For the sake of brevity, the two rejections under 103(a) are addressed together because each rejection relies on the Petricoin in combination with a secondary reference.

Applicants respectfully traverse these two rejections.

Applicant's claims call for performing multivariate analysis on a first set of samples that includes samples classified into at least two different biological states (e.g., cancer and non-cancer) and, separately, performing multivariate analysis on a second set of samples that includes samples classified into the different biological states.

The method further requires the **selection of first and second subsets of qualified common data elements from the first and second data sets, respectively, and further selecting an intersection subset of data elements from these two subsets.**

The Examiner argues that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." (Office Action, p.12). The Examiner argues that "(i)t is reiterated from the instant

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rejection that Petrocoin does not expressly teach selecting a second subset and displaying the intersection subset. Golub is relied upon in the instant rejection for disclosing the comparison of samples wherein the structure...in the initial sample is also seen in the independent sample and further displaying the intersection." (Office Action, p.12).

Applicants submit that the combination of references does not teach or suggest the invention as claimed. Nowhere does the Petrocoin reference teach or suggest the selection of subsets from the first and second data sets, nor does the Petrocoin reference teach the selection of an intersection subset from these subsets. None of Petrocoin, Golub or Barnhill teaches or suggests the selection of an intersection subset from a first or second data set, and none of the references provide any motivation to use any set or subset of selected data with the expectation of selecting an intersecting subset with similar properties.

The MPEP at 2100-119 provides the following explanation of what constitutes a proper rejection under 35 USC 103:

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR, 550 U.S., 82 USPQ2d at 1396.

According to the MPEP, among the exemplary rationales that may support a conclusion of obviousness are included:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;
- (C) Use of known technique to improve similar devices (methods, or products) in the same way;

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(D)Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(E)"Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(F)Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(G)Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention

The Examiner has failed to support the instant rejections under 35 USC 103(a) with any reasons of why the claimed invention would have been obvious according to the standards outlined in the MPEP.

The Petrocoin reference is directed to the generation of proteomic spectra from serum to identify proteomic patterns that distinguish neoplastic from non-neoplastic disease in the ovary. As pointed out by the Examiner, the Petrocoin reference teaches two biological state classes- "unaffected women" and "women with ovarian cancer" (see, e.g. table 2, p.576).

The Examiner argues that "Petrocoin discloses analyzing two independent sets of samples...one "sample" is composed of 50 control samples for preliminary analysis, other 17 control samples, and samples from cancer patients." (Office Action, p.6). The Examiner argues that "(a) second "sample set" is composed of 50 control samples for the masked analysis, other unaffected samples, and benign disease control samples (and) teaches that results from the test (masked data) may be added to the model/dataset to improve prediction." (Office Action, p.6). The Examiner contends that "Petrocoin discloses that both 'samples' were collected and separately statistically analyzed to classify samples into different biological states...and also discloses an 'intersection' subset." (Office Action, p.6).

The instant disclosure teaches that an "'(i)ntersection' subset" refers to subset of common data elements in a plurality of **independent discovery data sets** which have been identified independently in each data set as meeting the selection criteria for each

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independent data set." ([0097], emphasis added). The instant disclosure teaches that "two data sets are independent if they are collected in such as way as to significantly decrease the chance of being subject to the same bias, i.e., data sets are independent if the populations used to obtain these data sets show a statistically significant difference with respect to at least one preanalytical variable." ([0116]. Further, the instant disclosure teaches that "data sets from multiple sources are generated by collection of samples from the same population of patients at different times and/or under different conditions. However, data sets from multiple sources do not comprise a subset of a larger data set, i.e., data sets from multiple sources are collected independently." ([0122]). Clearly, the data sets taught by the instant application and the data sets taught by the Petrocoin reference are different.

Nowhere does the Petrocoin reference teach **selection of first and second subsets of qualified common data elements from the first and second data sets, respectively, and further selecting an intersection subset of data elements from these two subsets.**

Neither Petrocoin nor any of the other cited documents disclose or suggest use of an intersection subset of data elements as Applicants disclose and claim, i.e.

"selecting an intersection subset of data elements from the first and second subsets, wherein each data element in the intersection subset is a member of both of the first and second subsets" as recited in Applicants' independent claim 112;

"a third computer readable program providing instructions for selecting an intersection subset of data elements from the initial subsets, wherein each data element in the intersection subset is a member of a majority of the initial subsets" as recited in Applicants' independent claim 149; and

"executing computer readable program code providing instructions for selecting an intersection subset of data elements from the initial subsets, wherein each data element in the intersection subset is a member of a majority of the initial subsets" as recited in Applicants' independent claim 182.

Golub fails to remedy such deficiencies of the Petrocoin document. Golub merely reports that prediction strength was low from laboratories using different collection

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protocols, see p. 533, first column. Nowhere does Golub disclose or suggest using subsets of the original data sets to select an intersection subset.

Barnhill also does not disclose or suggest use of first and second independent discovery data sets as Applicants claim. Barnhill also does not suggest disclose or suggest using subsets of the original data sets to select an intersection subset.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the foregoing rejections.

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**CONCLUSION**

In view of the above amendment and response, Applicants believe that the pending application is in condition for allowance.

The Director is hereby authorized to charge any credits or deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 58369 (71699).

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Respectfully submitted

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